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*Pub C1* d) determining whether the drug or drug candidate has a therapeutic or toxic effect on the cell.

*2* 22. The method of claim *1* 21, wherein the cell is a human cell.

*3* 23. The method cell of claim *2* 22, wherein the cell further comprises a selectable marker gene.

*Pub C2* 24. The method of claim 22, wherein the recombinant polynucleotide comprises a constitutive promoter.  
*B1*

*cm it* 25. The method of claim 22, wherein the recombinant polynucleotide comprises an inducible promoter.

*6* 26. The method of claim *2* 22, wherein the cell is a liver cell.

*7* 27. The method of claim *6* 26, wherein the cell is a hepatocyte.

*8* 28. The method of claim *2* 22, wherein the cell is a nerve cell.

*9* 29. The method of claim *8* 28, wherein the cell is a glial cell, astrocyte, or oligodendrocyte.

*10* 30. The method of claim *9* 28, wherein the cell is a neuron of the central nervous system.

*11* 31. The method of claim *10* 30, wherein the cell is a cholinergic or adrenergic cell.

*12* 32. The method of claim *2* 22, wherein the cell is a retinal pigmented epithelial cell.

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- 13~~35~~ 2 The method of claim 22, wherein the cell is a contractile cell.
- 14~~34~~ 13 The method of claim 33, wherein the cell is a heart muscle cell or smooth muscle cell.
- 15~~35~~ 2 The method of claim 22, wherein the cell is a fat cell.
- 16~~36~~ 2 The method of claim 22, wherein the cell is a fibroblast.
- 17~~37~~ 2 The method of claim 22, wherein the cell is a vascular endothelial cell.
- 18~~38~~ 2 The method of claim 22, wherein the cell is a hormone secreting cell.
- 19~~39~~ 18 The method of claim 38, wherein the cell secretes insulin or glucagon.
- 20~~40~~ 18 The method of claim 38, wherein the cell is a pituitary cell, thyroid hormone secreting cell, or adrenal cell.
- 21~~41~~ 2 The method of claim 22, wherein the cell is a fat storing cell.
- 22~~42~~ 2 The method of claim 22, wherein the cell is an epithelial or mucosal cell.
- 23~~43~~ 22 The method of claim 42, wherein the cell is an oral cavity cell, stomach cell, or intestinal cell.
- 24~~44~~ 22 The method of claim 42, wherein the cell is a mammary gland, uterus, or prostate cell.
- 25~~45~~ 22 The method of claim 42, wherein the cell is an air space epithelial cell of the lung.

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- 26~~46~~. The method of claim 22<sup>2</sup>, wherein the cell is a tubular cell of the kidney.
- 27~~47~~. The method of claim 22<sup>2</sup>, wherein the cell is a blood cell or a cell of the immune system.
- 28~~48~~. The method of claim 47<sup>27</sup>, wherein the cell is a T or B lymphocyte.
- 29~~49~~. The method of claim 47<sup>27</sup>, wherein the cell is a mast cell or eosinophil.
- 30~~50~~. The method of claim 47<sup>27</sup>, wherein the cell is a monocyte or macrophage.
- 31~~51~~. The method of claim 22<sup>2</sup>, wherein the cell is an osteoblast, osteocyte, or osteoclast.
- 32~~52~~. The method of claim 22<sup>2</sup>, wherein the cell is a chondrocyte or synovial cell.
- 33~~53~~. The method of claim 22<sup>2</sup>, wherein the cell is a stem cell.
- 34~~54~~. The method of claim 53<sup>33</sup>, wherein the cell is an embryonic stem cell.
- 35~~55~~. The method of claim 53<sup>33</sup>, wherein the cell is an embryonic germ cell.
- 36~~56~~. The method of claim 53<sup>33</sup>, wherein the cell is an adult stem cell.

57. The method of claim 22, wherein the polynucleotide encodes a full-length, naturally occurring human telomerase reverse transcriptase.

58. The method of claim 22, wherein the polynucleotide encodes a human telomerase reverse transcriptase having the amino acid sequence of SEQ ID NO:2. --